REMARKS

This Amendment responds to the Office Action dated August 22, 2005.

The Examiner rejected claims 1-11 and 22 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Zlotnick and Ostromoukhov, U.S. Patent No. 6,356,566. The Examiner rejected claims 12-15, 17, and 18 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Zlotnick, Ostromoukhov, and Shu, U.S. Patent No. 5,757,976. The Examiner rejected claim 16 under 35 U.S.C. § 103(a) as being an obvious design choice in view of the combination of Zlotnick, Ostromoukhov, and Shu. The Examiner rejected claim 19 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Zlotnick, Ostromoukhov, Shu, and Harrington, U.S. Patent No. 6,072,591.

Zlotnick discloses an encoder that filters pixels of a grayscale image by classifying them as either black or white using an algorithm designed simply to preserve *edge detail*. In a first step, Zlotnick's method uses two parameters, T and D to binarize some image pixels as black and some as white. In this step, any pixels darker than T+D/2 are classified as black and any pixels lighter than T-D/2 are classified as white. In a second step, pixels not classified as black or white in the first step are compared to the grey level average of neighboring pixels. Those that exceed the average by the value of D or greater are classified black and those that fall short of the average by the value of D or greater are classified as white. In a final step, pixels not categorized by the two aforementioned steps of Zlotnick are simply binarized about the threshold T.

To select the values T and D, Zlotnick discloses optimizing a merit function. That merit function evaluates candidate values of T and D based upon a quantitative estimation of the total number of both significant edges and non-significant edges that would be preserved by each

candidate pair of T and D when rendering the image using the disclosed method. *See* Zlotnick at col. 8 line 20 to col. 9 line 15. An edge is deemed significant where two neighboring pixels in each respective image differ by an amount D or greater. Thus, although the merit function detects edges based upon a comparison of neighboring pixels first within the source image, *and then separately thereafter* within the destination image *independent of the source image,* neither T nor D is selected based upon a comparison *between the value of a pixel of a source image with a corresponding pixel of the destination image.*

Each of independent claims 1, 5, and 12 includes the step of selecting a first "intensity" threshold based upon an "accumulated error" threshold. *See* Claim 1, step (a); Claim 5 step (c); and Claim 12 step (c). Independent claim 20 recites a threshold selection unit "selecting one of a plurality of threshold intensities for said selected threshold unit in response to an accumulated error for at least one of said current pixel and a pixel neighboring said current pixel." In order for the Examiner to find these limitations in Zlotnick, the Examiner defines Zlotnick's "error" as "the difference between the pixel value and the value of the variable T." *See* Office Action at p. 2. The Examiner first posits that if the error, as defined, exceeds the threshold of D/2 (an absolute value as defined by the Examiner), then *either* a first threshold of T+D/2 or a second threshold of T-D/2 will selected. *Id.* This is not the limitation recited, however, which requires selection of a "first intensity threshold" based upon exceeding (claim 1) or failing to meet (claims 5 and 12) an error threshold. The limitation does not read upon a method that, at best, discloses that upon the occurrence of a condition, narrows the choice of a threshold down to two.

Alternately, the Examiner suggests that the first intensity threshold that Zlotnick selects based upon the error threshold of D/2 is simply "T." *See* Office Action at p. 4. Values less than T

are binarized black and those greater than T are binarized white. The Applicant agrees with this analysis. However, as explained below, by defining the "error" as "the difference between the pixel value and the value of the variable T", the Examiner cannot then find the remaining claim limitations in any of claims 1, 5, 12, and 20 within Zlotnick, nor combine Zlotnick with Ostromoukhov as suggested by the Examiner.

At the outset, neither Zlotnick nor Ostromoukhov disclose any use for accumulating the error as defined by the Examiner, i.e. *the difference between the pixel value and T*, when deciding whether to render individual pixels as black or white. "T" is nothing more than a constant number used during the filtering process, but chosen experimentally in an optimization procedure. Subtracting T from a pixel value in a source image therefore does not reflect an "error" of that pixel, as that word is commonly known, and accumulating that difference when evaluating successive pixels serves no purpose known by the Applicant. Zlotnick does not suggest accumulating the error defined by the Examiner, *nor does Ostromoukhov*, which accumulates a different error, i.e. the difference between the value of a rendered pixel and a corresponding pixel of the source image being rendered. See Ostromoukhov at col. 9 lines 22-35 and 42-48. (This is *not* the error defined by the Examiner when reading Applicant's claims on the cited combination). In fact, it would appear that accumulating the differences between neighboring pixels and a constant T value, would inevitably tend to diminish the difference in luminance between neighboring pixels and thereby defeat the purpose of Zlotnick, which needs to detect those differences to enhance edges.

In any event, applicant has further amended each of independent claims 1, 5, 12, and 20 to specify that the error is "based upon a comparison between a pixel value of an input image and

a corresponding pixel value of an output image." Zlotnick discloses no such error, hence cannot suggest accumulating that error. The applicant notes that Zlotnick's threshold T and D optimization process never compares pixels from a source image to a corresponding pixel of a destination image, but only compares neighboring pixels entirely within each image to find "significant edges" and then tries to optimize preservation of those significant edges during the filtering process. Ostromoukhov does disclose such an error, but the prior art utterly fails to disclose any purpose for incorporating that type of defined error into the method of Zlotnick, and then accumulating it.

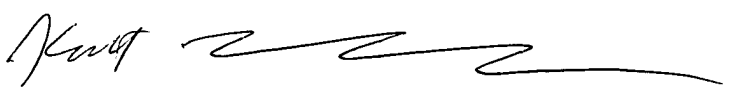
Furthermore, contrary to the Examiner's assertion, the Examiner has not shown that Zlotnick discloses the step of "selecting a *second intensity threshold if . . . [an] error of a pixel . . . exceeds a second error threshold* and said first intensity threshold is not selected." The Examiner asserts that Zlotnick discloses a "second intensity threshold" at col. 9 lines 36 to 41, but fails to state what either the "second intensity threshold" or the "second error threshold" are. In that passage, Zlotnick merely discloses that pixels not classified as black or white in the first step are compared to the grey level average of neighboring pixels. Those that exceed the average by the value of D or greater are classified black and those that fall short of the average by the value of D or greater are classified as white. If the Examiner believes that "D" is the second intensity threshold, then "D" is not selected based upon any "second error threshold", let alone a threshold of the error as previously defined by the Examiner. At best, Zlotnick discloses *two* thresholds that vary with the average grey level value (or luminance) of neighboring pixels, i.e. the thresholds are (1) the grey level average of neighboring pixels plus D and (2) the grey level average of neighboring pixels minus D. Exceeding one results in binary white and failing to meet

the other results in binary black. But, as stated in Applicant's prior response, neither of these can fairly be characterized as being based on an "error" of a neighboring pixel. (The Applicant is not attempting to characterize *the Examiner's* assertion, as the Examiner has not attempted to say what Zlotnick's "second intensity threshold" and "second error threshold" are. The Applicant is simply characterizing what the reference, in fact, discloses. Regardless of whether the Examiner believes that the "error" is a pixel value minus T, a "first error threshold" is the value "D" and a "first luminance threshold" is he value "T", it is still incumbent on the Examiner to state a prima facie case for obviousness by citing something in a cited reference disclosing a "second luminance threshold" and a "second error threshold" based upon the "error" as defined by the Examiner. Nothing in the cited passages discloses either of these elements).

Because the Examiner has not stated a prima facie case of obviousness, and because applicant has amended independent claims 1, 5, 12, and 20 to further distinguish over the cited combination, each of independent claims 1, 5, 12, and 20 as well as their respective dependent claims 2-4, 6-11, and 12-19, and 21-22 patentably distinguish over the cited prior art and should be allowable.

In view of the foregoing amendments and remarks, the applicant respectfully requests reconsideration and allowance of claims 1-22.

Respectfully submitted,



Kurt Rohlfs
Reg. No. 54,405
Tel No.: (503) 227-5631